



Subject card

Subject name and code	, PG_00069416						
Field of study	Konstrukcja nawierzchni						
Date of commencement of studies	October 2022		Academic year of realisation of subject		2025/2026		
Education level	first-cycle studies		Subject group				
Mode of study	Part-time studies		Mode of delivery		at the university		
Year of study	4		Language of instruction		Polish		
Semester of study	7		ECTS credits		4.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Transportation Engineering -> Faculty of Civil and Environmental Engineering -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Mariusz Jaczewski				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	10.0	0.0	0.0	15.0	0.0	25
	E-learning hours included: 0.0						
	eNauczanie source address: https://enauczanie.pg.edu.pl/2025/course/view.php?id=2429						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	25		5.0		70.0	100
Subject objectives	The objective of the course is to familiarize students with the following issues related to pavement design: 1. Classification of pavement structures 2. Pavement structure layers and their functions 3. Methods for designing flexible and rigid pavement structures (empirical) 4. The impact of climatic and traffic factors on the performance of pavement structures 5. Pavement structure durability and pavement failure criteria. Students achieve the course objectives by participating in lectures and design classes.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_W03] Demonstrate knowledge and understanding of the processes, established standards and design methods in the civil engineering subject area and of their limitations.	The student learns design methods along with their limitations in terms of materials and technology. They are able to assess which method to choose to solve a given design problem.	[SW1] Ocena wiedzy faktograficznej [SW3] Ocena wiedzy zawartej w opracowaniu tekstowym i projektowym
	[K6_K04] Engages in independent lifelong learning and individually follows the development of science and technology in the field of civil engineering.	The student becomes familiar with current pavement design methods and sources of knowledge where they can access up-to-date technical and scientific information.	[SK5] Ocena umiejętności rozwiązywania problemów występujących w praktyce [SK3] Ocena umiejętności organizacji pracy
	[K6_U04] Reads and prepares construction documentation (including drawings, graphic documentation in the CAD environment), efficiently uses maps as well as architectural, construction and geodetic drawings.	The student is able to create a technical drawing related to pavement structure issues. They can use CAD software to produce the appropriate drawings.	[SU1] Ocena realizacji zadania [SU3] Ocena umiejętności wykorzystania wiedzy uzyskanej w ramach przedmiotu [SU4] Ocena umiejętności korzystania z metod i narzędzi [SU5] Ocena umiejętności zaprezentowania wyników realizacji zadania
	[K6_U03] Design engineering objects and details, processes and engineering systems by applying appropriate standards and methods of design.	The student is able to design both flexible and rigid pavement structures using empirical methods	[SU1] Ocena realizacji zadania [SU4] Ocena umiejętności korzystania z metod i narzędzi [SU2] Ocena umiejętności analizy informacji [SU3] Ocena umiejętności wykorzystania wiedzy uzyskanej w ramach przedmiotu
	[K6_U07] Design and build engineering structures in a sustainable manner, with care for the natural environment and a minimum carbon footprint	The student is able to select the appropriate construction material for the corresponding pavement layer. The student can indicate in which layer recycled materials can be used. They are able to assess how to choose a technology that reduces the carbon footprint.	[SU2] Ocena umiejętności analizy informacji [SU3] Ocena umiejętności wykorzystania wiedzy uzyskanej w ramach przedmiotu [SU1] Ocena realizacji zadania
Subject contents	Course content – lecture As part of the lecture, the student will get to know the following topics: Lecture 1 - Basic information regarding pavement structure design in Poland; Classification of pavement structures; pavement structure layers and their functions Lecture 2 - Empirical methods of road pavement design (CBR, USSR, AASHTO '93 methods) Lecture 3 - Concrete pavement design; The impact of climatic factors on road pavements Lecture 4 - The impact of traffic on road pavements; Pavement durability and criteria for road pavement failure Course content – project Project No. 1 - Catalog of typical flexible and semi-rigid pavement structures Project No. 2 - AASHTO'93 empirical method Project No. 3 - Catalog of typical rigid pavement structures Project No. 4 - Westergaard's empirical method Project No. 5 - Knapton's empirical method Project No. 6 - Catalog of typical pavement structures for light traffic		

Prerequisites and co-requisites	The student has basic knowledge regarding road engineering issues: 1. Geometric road design 2. Basic information about materials used in road construction 3. Basic information about pavement structures		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Completion of project tasks	60.0%	40.0%
	Written exam of the lecture	60.0%	60.0%
Recommended reading	Basic literature	Piłat J., Radziszewski P. Nawierzchnie asfaltowe Das A. Analysis of Pavement Structures Huang Y. Pavement Analysis and Design Rolla S. Badania materiałów i nawierzchni drogowych Błażejowski K., Styk S. Technologia warstw asfaltowych AASHTO Guide for design of pavement structures, 1997 Poradnik asfaltowy, Orlen	
	Supplementary literature	Internet sources: 1. https://www.gov.pl/web/infrastruktura/wr-d (section 60) 2. https://www.sciencedirect.com/	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Projects - pavement design based on the Catalogue of Typical Pavement Structures; pavement design based on the empirical method Lecture, sample questions: 1. Provide the classification of road pavement structures along with a brief description. 2. Describe the AASHTO'93 design method. 3. How does temperature affect the road pavement? 4. How do we determine traffic load for pavement design purposes?		

Practical activities within the subject	Not applicable
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